# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/083,670 | 02/26/2002 | Eitan Bachmat | 07072-152001 / EMC 02-203 | 9453 |

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| 26161  7590  11/30/2004 | EXAMINER | |
| FISH & RICHARDSON PC | NGUYEN BA, HOANG VU A | |

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| 2122 | |

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DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on _26 February 2002_.

2a)☐ This action is **FINAL**.  2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) _1-29_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-29_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _17 March 2003_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All  b)☐ Some *  c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

1.     This action is responsive to the application filed February 26, 2002.

2.     Claims 1-29 have been examined.

### *Priority*

3.     The priority date considered for this application is February 26, 2002.

### *Oath/Declaration*

4.     The oath or declaration is defective.  A new oath or declaration in compliance
with 37 CFR 1.63 identifying this application by application number and filing date is
required.  See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because it does not include the signature
and date of inventor Eitan Bachmat.

### *Drawings*

5.     The drawings filed March 17, 2003 are objected to because Figure 2 does not
show the source of branch 22 (e.g., input data-stream).

Appropriate correction is required.

### *Specification*

6.     The title of the invention is not descriptive. A new tittle is required that
is clearly indicative of the invention to which the claims are directed.

The following title is suggested: – Method and System for Evaluating
Performance of Algorithms Executed by Data-Storage Systems –

7.    The Abstract of the disclosure is objected because the phrase "The performance of a competing algorithm executing in place of the incumbent algorithm is then simulated" in lines 3-4 is unclear. It is not clearly understood whether the term "performance" in this context is to be interpreted as being "execution of an action" or as being "efficiency." If performance is to be interpreted as being efficiency, it is then unclear as to how an efficiency value (e.g., 75%) could be simulated.

8.    The same remark also applies to the disclosure, which also contains use of the term "performance" in the context of "efficiency."

Correction is required.

## *Claim Objection*

9.    Claims 14 and 29 are objected to because of the following informalities:

a.    a conjunctive – and – should be added at the end of the limitation preceding the last limitation of the claim;

b.    the phrase "a competing algorithm" before the limitation "performance of said competing algorithm" in line 5 of claim 14 and line 6 of claim 29 appears to be redundant and should be deleted.

## *Claim Rejections - 35 USC § 112*

10.    The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly
pointing out and distinctly claiming the subject matter which the applicant regards as his
invention.

11.    Claims 2-5, 7, 9-11, 13-14, 16-22, 24-26 and 28-29 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a.      Indefinite:

i.      Claims 2 (line 2) and 17 (line 3) recite the limitation "said competing algorithm is **preferable** to said incumbent algorithm." It is unclear what standards are being used to determine that a competing algorithm is preferable to an incumbent algorithm. This limitation is thus vague and indefinite.

ii.     Claims 3 (line 3), 4 (line 3), 5 (line 3), 7 (line 2), 18 (line 3), 19 (line 3), 20 (line 4) and 22 (line 3) recite the limitation "a selected interval." It is unclear as to whether or not time interval is being referred to.

iii.    Claims 9 (line 2), 13 (line 1), 24 (line 2) and 28 (line 2) recite the limitation "cost associated with replacing said incumbent algorithm." The associated cost is deemed vague and indefinite because it is unclear whether the cost relates to finance or performance.

iv.     Claims 1 (line 5), 10 (line 4), 11 (line 4), 13 (line 3), 16 (line 6), line 21 (lines 2, 5), 25 (line 5), 26 (lines 5, 9) and 28 (line 4) recite the limitation "simulating a performance of said competing algorithm." It is not clearly understood whether the term "performance" in this context is to be interpreted as being "execution of an action" or as being "efficiency." If performance is to be interpreted as being efficiency, it is then unclear as to how an efficiency value (e.g., 75%) could be simulated.

v.      Claims 14 (line 9) and 29 (line 10) recite the limitation "data indicative of a **comparison** between said incumbent algorithm and said competing algorithm." Since it is unclear as to what criteria have been used for comparison, the Examiner reads the limitation as "data indicative of a performance comparison for art rejection purposes.

vi.    Claims 13 (line 2) and 28 (lines 2-3) recite the limitation "a performance selected from said actual performance." This limitation is deemed unclear because it is not understood whether "said actual performance" includes other performance criteria among which one is being selected for incorporating the cost of replacement.

b.    Lack of antecedent basis:

i.    Claims 14 (lines 3, 7) and 29 (lines 4,8) recite the limitation "said input stream." There is insufficient antecedent basis for this limitation in the claim.

ii.    Claim 5 recites the limitation "The method of claim 3, wherein the displaying data comprises." This limitation lacks proper antecedent basis. The limitation "The method of claim 3, wherein the displaying data comprises" should be changed to – The method of claim 4, wherein the displaying data comprises – in order to have proper antecedent basis.

iii.    Claim 20 recites the limitation "The method of claim 18, wherein the displaying data comprises." This limitation lacks proper antecedent basis. The limitation "The method of claim 18, wherein the displaying data comprises" should be changed to – The method of claim 19, wherein the displaying data comprises – in order to have proper antecedent basis. Appropriate correction is required.

## Claim Rejections - 35 USC § 101

12.    35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13.     Claim 15 is rejected under 35 U.S.C § 101 because the claimed invention is directed to non-statutory subject matter.

Claim 15 merely recites a system comprising a data-condenser, a competing-algorithm simulator and a tournament manager. These components are merely software components, i.e., computer programs per se. Such claimed matter, which is descriptive material *per se*, non-functional descriptive material is not statutory because it is not a physical "thing" nor a statutory process as there are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed aspects of the invention which permit the computer's program's functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the computer's functionality. In contrast, a claimed computer-readable medium encoded with a computer program defines structural and functional interrelationships between the computer program and the medium which permit the computer program's functionality to be realized, and is thus mandatory. *Warmerdam*, 33 F.d at 1361, 31 USPQ 2d at 1760. *In re Sarkar*, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978). See MPEP § 2106 (IV)(B)(1)(a).

On this basis, claim 15 is rejected under 35 U.S.C. § 101.

## *Claim Rejections - 35 U.S.C. § 102*

14.     The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign
country or in public use or on sale in this country, more than one year prior to the date of
application for patent in the United States.

15.     Claims 1-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S.
Patent No. 5,809,282 to Cooper et al. ("Cooper").

**Claims 1, 14, 16 and 29**

Cooper discloses at least:

*evaluating an incumbent-algorithm score indicative of a performance of an incumbent*
*algorithm* (see at least Figure 3, step 320 and related discussion in the specification; note
that the claimed "incumbent algorithm" is equated to Cooper's baseline network
simulation);

*simulating performance of a competing algorithm executing in place of said incumbent*
*algorithm* (see at least Figure 3, steps 340, 350 and related discussion in the
specification);

*on the basis of said simulation, evaluating a competing-algorithm score predictive of a*
*performance of said competing algorithm* (see at least Figure 3, step 360 and related
discussion in the specification); and

*providing said competing-algorithm score and said incumbent-algorithm score to an*
*output device* (see at least Figure 3, step 370 – providing scores; Figure 2, item 240 and
Figure 1, items 120, 122 – output device; and related discussion in the specification).

**Claims 2 and 17**

The rejection of base claims 1 and 16 are incorporated.  Cooper further
discloses *providing data indicative of whether said competing algorithm is preferable to said*
*incumbent algorithm* (see at least Figure 3, step 370 and related discussion in the

specification; the report showing the ranking in accordance with an user's preferences would help the user determine whether competing algorithms, i.e., new network simulations are preferable to the baseline network simulation).

### Claims 3 and 18

Rejections of base claims 1, 16 and intervening claims 2, 17 are incorporated. Cooper further discloses *wherein providing data comprises monitoring said incumbent-algorithm score and said competing-algorithm score over a selected interval* (see at least 8:66 – 9:7).

### Claims 4 and 19

Rejections of base claims 1, 16 and intervening claims 2-3, 17-18 are incorporated. Cooper further discloses *wherein providing data further comprises displaying data indicative of a performance of said incumbent algorithm and said competing algorithm during said selected interval* (see at least Figure 3, step 370 – providing scores; Figure 2, item 240 and Figure 1, items 120, 122 – output device; and related discussion in the specification).

### Claims 5 and 20

Rejections of base claims 1, 16 and intervening claims 2-3, 17-18 are incorporated. Cooper does not specifically disclose *wherein displaying data comprises evaluating a ratio indicative of an extent to which said competing-algorithm score exceeds said incumbent algorithm score during said selected interval.* However, the claimed ratio is deemed inherent to Cooper's scenario assessment, architecture assessment and cost assessment (9:3-26) because in order to assess these performance criteria, a ratio has to be established.

### Claims 6 and 21

The rejection of base claims 1 and 16 is incorporated. Cooper further discloses *wherein simulating performance comprises*:

*obtaining meta-data characterizing an input-data stream provided to said incumbent algorithm* (see at least Figure 3, steps 330, 340 and related discussion in the specification); and

*simulating performance of said competing algorithm were it to operate on an input-data stream characterized by said meta-data* (see at least Figure 3, steps 350, 360 and related discussion in the specification).

### Claims 7 and 22

Rejections of base claims 1, 16 and intervening claims 6, 21 are incorporated. Cooper further discloses *wherein obtaining meta-data comprises maintaining statistics descriptive of said input data-stream during a selected interval* (see at least 9:17-20).

### Claims 8 and 23

The rejection of base claims 1 and 16 is incorporated. Cooper does not specifically disclose *wherein evaluating a competing-algorithm score comprises incorporating a penalty into said competing-algorithm score.* However, assigning penalty would necessarily be inherent to Cooper's cost assessment so ranking could be achieved (see at least Figure 3, steps 360, 370 and related discussion in the specification; 9:20-26).

### Claims 9 and 24

Rejections of base claims 1, 16 and intervening claims 8, 23 are incorporated. Cooper does not specifically disclose *selecting said penalty to be indicative of a cost associated with replacing said incumbent algorithm with said competing algorithm.* However, this feature is

deemed inherent to the Cooper teachings because the objective of Cooper's cost assessment is to determine which scenario would not be cost effective (see at least Figure 3, steps 360, 370 and related discussion in the specification; 9:20-26).

### Claims 10 and 25

Cooper discloses at least:

*on the basis of said statistical characterization, simulating a performance of said competing algorithm were it to execute on said data-storage system in place of said incumbent algorithm* (see at least Figure 3, steps 340, 350 and related discussion in the specification).

Cooper does not specifically disclose *statistically characterizing a usage pattern of said data-storage system.* However, the usage pattern is deemed inherent to Cooper's gathering of statistical information of users of network equipment (see at least 9:17-20) because without users using the network equipment and as a result their usage pattern, gathering of statistical information would not be possible.

### Claims 11 and 26

The rejection of base claims 10 and 25 are incorporated. Cooper further discloses:

*evaluating actual performance of said incumbent algorithm in response to said usage pattern* (see at least Figure 3, step 320 and related discussion in the specification);

*simulating performance of said competing algorithm in response to said usage pattern* (see at least Figure 3, steps 330, 340, 350, 360 and related discussion in the specification); and

*communicating, to an output device, data indicative of a comparison between said actual performance of said incumbent algorithm and said simulated performance of said competing*

*algorithm* (see at least Figure 3, step 370 – providing scores; Figure 2, item 240 and Figure 1, items 120, 122 – output device; and related discussion in the specification).

### Claims 13 and 28

Rejections of base claims 10, 25 and intervening claims 11, 26 are incorporated. Cooper further discloses *incorporating a cost of replacement into a performance selected from said actual performance of said incumbent algorithm and a simulated performance of said competing algorithm* (see at least 9:3-26).

### Claims 12 and 27

The rejection of base claims 10 and 25 are incorporated. Cooper further discloses *wherein statistically characterizing a usage pattern of said data-storage system comprises generating meta-data that characterizes an input data stream to said data-storage system* (see at least Figure 3, steps 310, 330 and related discussion in the specification).

### Claim 15

Cooper discloses at least:

*a data-condenser configured to receive a data-stream, said data-condenser generating meta-data characterizing said data stream* (see at least Figures 2 and 7, item 240 and related discussion in the specification);

*a competing-algorithm simulator in communication with said data condenser, said competing algorithm simulator generating data indicative of a performance attribute of a competing algorithm when said competing algorithm operates on a data-stream characterized by said meta-data* (see at least Figure 3, Figure 2, items 210, 220, 230 and related discussion in the specification); and

*a tournament manager configured to provide output data indicative of a comparison
between a performance attribute of said competing algorithm and a corresponding performance
attribute of an incumbent algorithm* (see at least Figure 2, item 240; Figure 3, item 370 and
related discussion in the specification).

## Conclusion

16.    The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure.

17.    Any inquiry concerning this communication or earlier communications from
the examiner should be directed to Hoang-Vu "Antony" Nguyen-Ba whose telephone
number is (571) 272-3701.  The Examiner can normally be reached on Tuesday-
Friday, 6:45 to 16:45.

If attempts to reach the Examiner by telephone are unsuccessful, the
Examiner's supervisor, Tuan Dam can be reached at (571) 272-3695.  The fax phone
number for the organization where this application or proceeding is assigned is 703-
872-9306..

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Art Unit 2122

November 19, 2004

**ANTONY NGUYEN-BA
PRIMARY EXAMINER**